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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)



Applicant's or agent's file reference 190031	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/03426	International filing date (day/month/year) 06.08.2003	Priority date (day/month/year) 14.08.2002
International Patent Classification (IPC) or both national classification and IPC G06F17/30		
Applicant FLYINGSPARK LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 11 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 12.03.2004	Date of completion of this report 22.11.2004
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**INTERNATIONAL PRELIMINARY
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International application No. **PCT/GB 03/03426**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-6, 9-30 as originally filed
7, 8 filed with telefax on 09.11.2004

Claims, Numbers

1-34 filed with telefax on 09.11.2004

Drawings, Sheets

1-3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-3,11,14,18,19,27-34: no
Inventive step (IS)	Yes: Claims	
	No: Claims	4-10,12,13,15-17,20-26: no
Industrial applicability (IA)	Yes: Claims	1-34
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: WANG Z ET AL: "Prefetching in World Wide Web" GLOBAL TELECOMMUNICATIONS CONFERENCE, 1996. GLOBECOM '96. 'COMMUNICATIONS: THE KEY TO GLOBAL PROSPERITY LONDON, UK 18-22 NOV. 1996, NEW YORK, NY, USA, IEEE, US, 18 November 1996 (1996-11-18), pages 28-32, XP010220168 ISBN: 0-7803-3336-5
- D2: ZHIMEI JIANG ET AL: "Prefetching links on the WWW" COMMUNICATIONS, 1997. ICC '97 MONTREAL, TOWARDS THE KNOWLEDGE MILLENNIUM. 1997 IEEE INTERNATIONAL CONFERENCE ON MONTREAL, QUE., CANADA 8-12 JUNE 1997, NEW YORK, NY, USA, IEEE, US, 8 June 1997 (1997-06-08), pages 483-489, XP010227064 ISBN: 0-7803-3925-8

1. Novelty

1.1 The document D1 is regarded as being the closest prior art to the subject-matter of claims 1-3, 11, 14, 18 and 19, and discloses (the references in parentheses applying to the description and figure 5 of this document):

*A method of preloading data on a cache (Caching Proxy, fig.5) in a local machine (Browser, fig.5) , wherein said cache is operably coupled (Network, fig.5) to a data store in a remote host machine (implicit disclosure), the method characterized by the step of: determining a user behaviour profile for said local machine ("Access patterns", p.29, col.1, l.6);
retrieving data relating to said user behaviour profile from said data store ("The information on access patterns may be derived from servers' access statistics or from clients' configuration.", p.29, col.1, l.6);
preloading said retrieved data in said cache ("Although Coolist can prefetch most web pages directly by itself, ...", p.31, col.1, l.39), such that said data is made available to a user of said cache when desired ("Although prefetched pages can be cached in Coolist, we use the caching proxy as the store for prefetched pages.", p.31, col.2, l.11) wherein said step of determining is performed by a preload function (Coolist, fig.5) in said local machine (Browser, fig.5) operably coupled to said cache (Caching Proxy, fig.5) and/or a preload function in a remote host machine (implicit disclosure) operably coupled to said data store.*

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the method further characterized by the step of: predicting, by at least one preload function, a data type required by said cache user based on said determined user behaviour ("If one can anticipate the Web pages that a user will fetch in the future, it is possible to preload these Web pages to the user before they are requested....Thus, the effectiveness of prefetching depends on whether there is certain predictability in users' Web page accesses.", p.28, last par.)

wherein said event includes one or more of the following:

(i) a diarised event for said user ("Batch Prefetching: There are many Web pages that are read on a regular basis, such as on-line newspapers, weekly work reports, etc.", p.30, col.2, l.12);

(ii) a task to be performed by said user ("Start-Up Prefetching: A set of pages users need to look at that day may be prefetched in the background. It can be integrated with planning tools so that a to-do Web page is constructed each day for the users and corresponding Web pages are prefetched at the start-up for later viewing.", p.31, col.1, l.10);

(iii) a personal interest identified for said user ("For regular services such as on-line newspapers, users often know in advance what they want to see. Information on users' future accesses may also be derived from users' planning tools such as diaries or todo lists.", p.29, col.1, l.20);

(iv) a routine behaviour pattern identified for said user ("Start-Up Prefetching", p.31, col.1, l.10);

(v) a predictable behaviour pattern identified for said user ("As a user usually spends some time (seconds to minutes) on a page, we can potentially pipeline the operation by fetching the next page while the user is looking at the current one.", p.31, col.1, l.17);

*(vi) a foreseeable behaviour pattern identified for said user (p.31, col.1, l.17);
further characterized by the step of: grouping data types into categories based on, for example, one or more of the following:*

(i) said data types,

(ii) a priority of said data type ("Start-up prefetching is configured with a file called .todo in user's home directory. When Coolist is invoked, it starts a low priority thread to prefetching all web pages listed in the .todo file.", p.31, col.2, l.16),

(iii) a predicted event time for said data to be preloaded ("Start-Up Prefetching", p.31, col.1, l.10); and

(iv) scheduling a preloading operation of data based on said grouping ("Batch Prefetching", p.30, col.2, l.12);

further characterized by an intermediate step of: determining whether said cache has capacity to store said data to be preloaded, prior to commencing said step of preloading (implicit disclosure);.

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The subject-matter of claims 1-3, 11, 14, 18 and 19 is therefore not novel (Article 33(2) PCT).

1.2 Apparatus, system and medium claims 27-34 are equally not novel following the argumentation given in 1.1.

1.3 In communications from 20 July and 9 November 2004 the applicant has amended claims 1, 4, 6, 29, 32 with the features of
*calculating a safety margin and a prediction time
preloading at a time at or before said safety margin prior to said predicted preload time*

However, as proxy caching and prefetching were conceived for reducing the burdens of network latency and congestion, it can be argued whether said safety margin is implicitly disclosed by every prefetching cache of the prior art. The time a cache chooses to prefetch data, is the time it predicts the data to be required, minus a possible safety margin in order to compensate for network irregularities, in other words: $\text{predicted time} - \text{safety margin} = \text{prefetch time}$.

Hence the subject-matter of amended claims 1, 29 and 30 still seems to be not novel over D1 or D2 in the sense of Article 33(2) PCT, unless the prediction time and safety margin is characterized further.

2. Inventive Step

Even if the subject-matter of claim 1, 29 and 30 would be considered as novel, the application lacks an inventive step required by Article 33(3) PCT.

2.1 The subject-matter of claims 4-6, 8-10, 12-13, 15-17 and 20-26 differs from the teachings of D1 in that there is no *explicit* disclosure of predicting, adapting or setting assorted timing parameters
event time, preload time, current time, safety margin, timing margin (Tmmdg), preferred maximum time (Tmpl), economical time

The problem to be solved by the present invention may therefore be regarded as how to optimize the prefetch time and duration. The skilled person confronted with said problem certainly would contemplate modeling the prefetch time and duration by means of timing parameters - being merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed - and come up with a solution falling within the scope of claims 4-6, 8-10, 12, 13, 15-16, 21-22.

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Hence, said said claims cannot be considered as involving an inventive step (Article 33(3) PCT).

2.2 The subject-matter of claims 7, 17, 20 and 23-26 differs from the teachings of D1 in that there is no disclosure of the prefetching being based on typical caching parameters *cache re-load rate, network cost, network load, cache hit rate, preload success rate*

The problem to be solved by the present invention may therefore be regarded as how to optimize the performance of the prefetching cache. The skilled person confronted with said problem certainly would consider tuning the usual caching parameters of the state of the art - which comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen - and come up with a solution falling within the scope of claims 7, 18, 21 and 24-27.

Hence, said said claims cannot be considered as involving an inventive step (Article 33(3) PCT).

2.3 All dependent claims introduce assorted caching and timing parameters in order to provide a better solution to the problem of predicting a time more precisely for data to be required and to be prefetched. However, the application as filed does not contain any amendable subject-matter beyond the state of the art, that could lead the skilled person to solve this problem. The application lacks disclosure of the alleged invention as required in Article 5 PCT.

The citations supplied by the representative (page 16, line 26 through page 22, line 13) to counter said objection are considered as mere state of the art and not enabling for the skilled person to carry out the alleged invention as required by Article 5 PCT.

3. Comments

3.1 Claims 1-16 do not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claims attempt to define the subject-matter in terms of the result to be achieved, rather than describing in more concrete terms, viz. in terms of how the effect is to be achieved. This lack of disclosure leaves the technical realisation/implementation for reaching said results open to the skilled person and implies that a more concrete description is not necessary for the skilled person. Hence the technical effect and its implementation can be considered as comprised in the state of the art which, as a consequence, renders said claims obvious over the closest prior art.

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3.2 The examining division considers the present application to be devoid of non-obvious subject-matter in the light of the closest prior art. It is not apparent which part of the application could serve as a basis for a new, non-obvious claim. This objection hence cannot be overcome by amendment.

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